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EXAMINER

LAZORCIK, JASON L

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,959

Applicant(s)

KEARNES ET AL.

Examiner

Jason L. Lazorcik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 1-24 and 54-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/27/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 25-53, drawn to methods of producing gemstone material, classified in class 65, subclass 36.
- II. Claims 1-24 and 54-57, drawn to gemstone materials, classified in class 428, subclass 426.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed could be made by a materially different process such as by use of an adhesive rather than heat to bind the dichroic particles.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Eric Snustad on April 27, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 25-53. Affirmation of this election must be made by applicant in replying to this

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Office action. Claims 1-24 and 54-57 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 25, 28, 37 through 42, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabo(US 2003/0014998 A1) in view of Argoitia (US 6,749,936 B2) Hereafter referred to as the Cabo-Argoitia combination. Briefly, Cabo teaches a method of assembling a laminate structure consisting of two glass sheets separated by an interposed layer of colored glass particles which is fused into a unitary body at elevated temperatures.

Specifically, Cabo sets forth a process according to the following:

1. Provide first and second sheets of translucent glass (pg1, ¶[0010] which are held equivalent to the claimed provision of “two sheet-like substrates”.
2. Coating at least a portion of at least one of the sides of the first or second sheets with a ceramic paint (pg 1, ¶[0011]) wherein said ceramic paint coatings comprise a ceramic frit, pigment and a vehicle (pg2, ¶[0026]). It is further noted that the frit is prepared by grinding frit batch ingredients into fine particles so as to pass through a 325 US Standard Sieve mesh screen or finer.
3. Placing first and second coated sheets together to form a sandwich structure (pg1, [0012]) which in combination with (2) above is held equivalent to providing “a laminate” comprising a plurality of particles sandwiched between “two sheet-like substrates” as claimed.
4. Heating the sandwich (structure) to a sufficient temperature for a sufficient time such that the first and second coated sheets of glass are fused together (pg1, [0014]) which is held equivalent to the claimed process of “heating the laminate to an elevated temperature” such that the plurality of particles become fused between the sheet-like substrates.

The four general steps set forth by Cabo and as outlined above set forth a procedure that is accepted as “old and well established in the art” (pg1, [0006]). However, as related this process fails to particularly indicate that that the plurality of particles should be of a “dichroic” nature where the term “dichroic” is understood as the property possessed by some crystals of exhibiting two different colors when viewed along

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different axes (The American Heritage® Dictionary of the English Language: Fourth Edition. 2000).

Argoitia presents a route to the fabrication of achromatic multilayer diffractive pigment flakes and foils which incorporate diffractive structures on their surfaces. The excerpt of Figure 21 from the immediate reference as presented below indicates that the Argoitia diffractive pigment flakes exhibit at least two different colors when viewed along different axes. It is therefore understood that the diffractive pigment flakes described in the immediate reference are effectively equivalent to the claimed "a plurality of dichroic particles". It is further indicated that the diffractive pigment flakes can be used to "add unique decorative features to products" (Column 6, Lines 31-35) and that the provided optical effect is typically manifest under direct irradiation as a rainbow of colors surrounded by a silvery or bright metallic region" (Column 6, Lines 62-66).

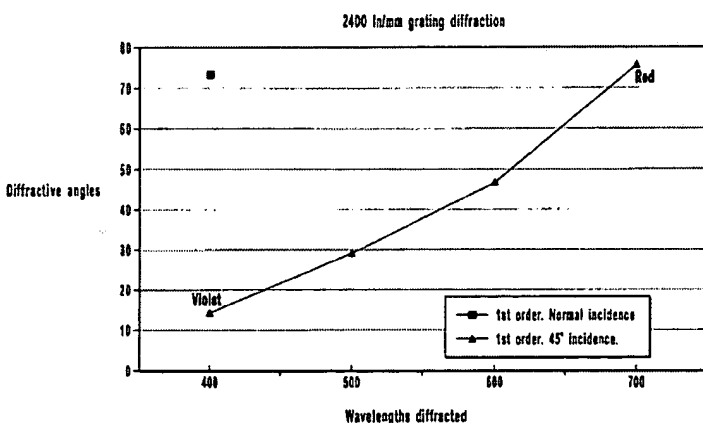


FIG. 21

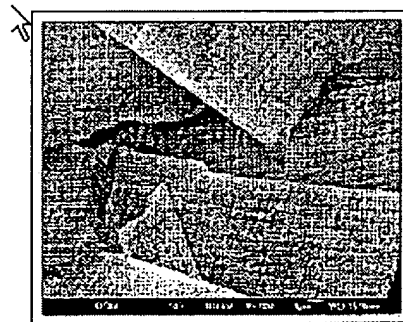


FIG. 28

It would therefore be obvious to one of ordinary skill in the art attempting to produce a laminated glass object presenting a unique dichroic optical effect to substitute the pigment in the ceramic paint set forth by Cabo with the dichroic pigment flakes or “a plurality of dichroic particles” as described by Argoitia in order to achieve “a unique decorative feature”.

With respect to Claim 28, Cabot indicates that the fusing temperature or “said elevated temperature” is between about 1300°F and about 1600°F (704°C to 871°C) which reads on the claimed range for said elevated temperature of between about 600oC and about 850oC

Regarding Claim 37 and with reference to the rejection of Claim 25 above, Cabo (pg 3, ¶ [0031]) indicates that the laminate is manufactured by first applying the coating of ceramic paint to the first principle surfaces of the glass sheets and sandwiching together said principle sides to form a laminate. The Cabo- Argoitia combination reads on the immediate claim wherein the act of **applying the ceramic paint** is understood to read as a method of **positioning the plurality of dichroic particles** between the sheet-like substrates.

Regarding Claim 38, Argoitia discloses that the diffractive pigment flakes which consist of a layered structure can be formed by a process where the various layers are sequentially deposited on a web material. Further, “This thin film structure is subsequently **fractured** and removed from the web to form a plurality of flakes” (Column 19, Lines 10-15). This disclosure by Argoitia is understood as a method wherein the plurality of dichroic particles comprises crushed dichroic particles and

where “**fractured**” dichroic particles are held equivalent to “**crushed**” dichroic particles. Further, the claimed process of “providing of the laminate” which comprises providing said crushed dichroic particles and positioning said crushed dichroic particles is set forth by Cabo as outlined in the rejection of Claim 37 above.

Regarding Claim 39 and in light of Claim 38, Argoitia indicates that the thin film structure, which is a precursor to the dichroic particles, is fractured or crushed. Further, the immediate reference indicates that the providing of the crushed dichroic particles comprises forming depositing dielectric layers or a “dichroic coating” on a support layer wherein said support layer may include silicon dioxide or glass (Column 19, Lines 50-56) and fracturing said coating to form flakes as indicated above. As such the Argoitia process reads on the immediate claim wherein the providing of crushed dichroic particles comprises providing a glass sheet or “silicon dioxide support” **bearing** a “dichroic coating” or dielectric layers.

Regarding Claim 40 and with particular reference to the Claim 39 rejection above, the Argoitia process reads on the immediate claim wherein the providing of crushed dichroic particles comprises providing a glass sheet or “silicon dioxide support” **bearing** with a “dichroic coating” or dielectric layers *wherein said dichroic coating is coated upon the glass sheet or “silicon dioxide support”*.

With respect to claim 41, it is an old and well established practice in the art of manufacturing fine particulates to perform a size selection process by passing said particles through a variety of mesh screens. In the immediate case, Cabo indicates that in preparing the fine particulate ceramic frit for incorporation into the ceramic paint the

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crushed chunks of frit are crushed to a fine particles and passed through a 325 US Standard Sieve mesh screen or finer (pg2, ¶ [0027]). Further, Argoitia indicates that the diffractive pigment flakes can have a preselected size and loading in the pigment medium to suit the application technique (Column 22, Lines 26-30). It would therefore be obvious to utilize the well established mesh screen process to segregate dichroic pigment flakes described by Argoitia into size selected groups and to further recombine some particles from different size ranges so as to produce a "preselected size" or size distribution of particles in order to suite the particular deposition process.

Similarly with respect to Claim 42, Cabo indicated a method wherein particles are separated into different size selected groups by moving the crushed particles through one or more sieves as outlined above in the rejection of Claim 41.

With respect to Claim 49:

1. The rejection of Claim 25 set forth a method wherein two sheet like structures were provided along with a plurality of dichroic particles
2. The rejection of Claim 41 indicated that it would be obvious by Cabo-Argoitia to create a "preselected size" of dichroic pigment flakes by first separating the flakes into different groups and recombining some flakes from different groups into a "preselected size" range to produce "size classified particles".
3. The rejection of Claim 37 indicated that it would be obvious according to the Cabo-Argoitia combination to position a plurality of size-classified particles between two sheet-like substrates to form a laminate.

4. And, the rejection of Claim 25 laid out that it would be obvious to heat the laminate to an elevated temperature such that the particles become fused between the sheet-like substrates.

Claims 26, 27, 29 through 31, and 32 through 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabo and Argoitia as applied to the rejection of Claim 25 and in further view of Gajewski (5,208,080) hereafter referred to as the Cabo-Argoitia-Gajewski combination.

Specifically with respect to Claim 26, Cabo-Argoitia teaches the heating of a laminate structure to fuse said structure into a unitary body as indicated above, but fails to indicate that said heating should be conducted under a vacuum environment. Gajewski indicates that problems of optical distortion can arise in a laminate structure due to trapped air and moisture (Column 2, Lines 32-36). The immediate reference further indicates that a laminate assembly may be heated, preferably while under vacuum by known means, such as placing the laminate assembly in a heated chamber (Column 6, lines 31-34). Gajewski continues (Column 6, Lines 48-51) by stating that after heating under vacuum, "the laminate assembly may be removed from vacuum for application of additional heat and laminating pressure to bond the laminate elements". It would have been obvious to one of ordinary skill in the art at the time of the invention attempting to preclude optical distortions arising from entrained moisture or gas in a structure as set forth by Cabo-Argoitia, to perform at least a portion of the heating step under vacuum as indicated by Gajewski.

Regarding Claim 27, Gajewski indicates an intended use of the manufactured to include incorporation into an automobile windshield which is traditionally utilized at normal ambient conditions. As such, the process related by Gajewski, which includes a heating step or "period", inherently includes a cooling step or "a desired cooling period" on the return to ambient conditions from the "elevated temperature". Further, Gajewski indicates that after elimination of the vacuum, the laminate is exposed to elevated temperatures and elevated pressures generally approaching 100 psig to 200 psig in an autoclave (Column 6, Lines 48-59). Since Gajewski sets forth no further process steps involving sub-atmospheric pressures or processes carried out "under vacuum", it is understood that the remainder of the process including the "cooling period" proceeds at or above ambient pressure conditions. Therefore, the process as set forth in the immediate reference is understood to read on Claim 27 wherein a laminate is allowed to cool for a "desired cooling period" and the laminate is exposed to atmospheric pressure or super-atmospheric pressure during at least a portion of the cooling period.

With respect to Claims 29 through 31 and in view of the Gajewski utilization of an applied vacuum to preclude optical distortion in fused laminate structures arising from entrained air and moisture, it would be obvious to optimize said applied vacuum to optimize the rate of removal of said entrained air and moisture for the following reasons. The relationship between an applied pressure and the rate of mass transport entrained gases from a fluid into the vapor state is old and well established. Specifically a simplified relationship system pressure (P) with mass transport rate or "total outgassing

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rate" (Q) is well established in the art by the following (<http://cas.web.cern.ch/cas/Spain-2006/PDFs/Chiggiato-1.pdf>):

The total outgassing rate Q, together with the applied pumping speed S, defines the pressure in the vacuum system:

$$P = \frac{Q}{S} + P_0$$

P_0 : ultimate pressure of the pumping system.

In general S varies in a range of three orders of magnitude ($\approx 1 \rightarrow 1000 \text{ l.s}^{-1}$) while Q can extend over more than 10 order of magnitude ($\approx 10^{-5} \rightarrow 10^{-15} \text{ Torr l.s}^{-1}.\text{cm}^{-2}$).

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”; see *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation (See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). Since it is old and well known in the art that the rate of outgassing is related to the instantaneous system pressure, system pressure or the magnitude of “a vacuum” is considered a result-effective variable. It would have been obvious with respect to Claims 29 through 31 for one of ordinary skill in the art at the time of the invention to vary the magnitude of the applied vacuum during the heating step of the lamination process in order to optimize the outgasing rate of entrained water and air.

Claim 32 is rendered obvious in light of the rejection of Claim 27 wherein Gajewski disclosed that the laminate assembly is heated, while still under vacuum, by placing the laminate assembly in a heated chamber (Column 6, lines 31-34). Said heated chamber indicated as capable of supporting a vacuum is understood to be functionally equivalent to the claimed "vacuum chamber". Further, the processing step set forth by Gajewski in the rejection of Claim 27 above indicated that the vacuum is vented and that the laminate is treated at elevated pressures of 100 – 200 psig (Column 6, Lines 48-59). Gajewski indicates that the application of elevated pressure or "laminating pressure" is effected in order to bond the laminate elements. This processing step is understood to read on the immediate claim wherein "the laminate is exposed to substantially atmospheric or ***super-atmospheric pressure*** by venting the chamber to an ambient atmosphere and/or ***by delivering pressurized gas into the vacuum chamber.***" While Cabo-Argoitia makes no specific indication of applied pressure to the laminate during the fusing of the sheets, it would be obvious to one of ordinary skill to apply said pressure as taught by Gajewski in order to provide a uniform and intimate bond between said sheets during the fusing and bonding step.

With respect to Claim 33, the Claim 25 rejection above specifically indicated that the "substrates comprise glass sheets. Further, the Claim 26 rejection indicated that the heating step was to bring the laminate including said glass sheets to a temperature range of between about 704°C to about 871°C and it was set forth in the specification (pg 20, Lines 10-11) that a laminate in said temperature range is in a softened state. It is therefore understood that by the rejection of Claim 26 that the laminate of the Cabo-

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Argoitia process is brought to the softened state by the heating step. Gajewski in the rejection of Claim 27 above indicated that the vacuum is vented and that the laminate is treated at elevated temperatures and elevated pressures of 100 – 200 psig (Column 6, Lines 48-59). Gajewski further indicates that the application of elevated pressure or “laminating pressure” is effected in order to bond the laminate elements. While Cabo-Argoitia makes no specific indication of applied pressure to the laminate during the fusing of the sheets, it would be obvious to one of ordinary skill to apply said pressure as taught by Gajewski ***before the glass sheets cool to a hardened state*** or as indicated in Claim 28 while the sheets are in the “fusing temperature” range.

Regarding Claim 34 and with specific reference to the Claim 33 rejection, Cabo indicates that fusing the laminate should take place at “the fusing temperature” which is understood to be at least at or of above the softening point of the sheet material. Further, as indicated in the Claim 33 rejection above, the application of pressure to the laminate sheet in the heated state is effected in order to assist in the bonding or fusing of the laminate elements. That said, it would be obvious to one of ordinary skill seeking to promote the fusion bonding of a laminate structure through application of elevated pressure as taught by Gajewski, to apply said elevated pressure to the laminate when the sheets are above the softening temperature or “in the softened state” as taught by Cabo.

Regarding Claim 35 with particular reference to the rejection of Claim 34 above, the application of elevated pressure to the laminate while in the “elevated temperature” or “fusing temperature” state is an obvious extension of the laminating process taught

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by Cabo with pressure assisted bonding as taught by Gajewski. As indicated in the Claim 26 rejection, the fusion temperature set forth by Cabo is between 704°C to 871°C which is in the softened state as indicated in the specification (pg 20, Lines 10-11). A laminate exposed to substantially atmospheric pressure or super-atmospheric pressure as taught by the Cabo-Argoitia-Gajewski combination would be so exposed in a temperature range between 704°C and 871°C and therefore before the glass or crystal sheets cool to a temperature below about 600°C.

Similarly with respect to Claim 36, a laminate exposed to substantially atmospheric pressure or super-atmospheric pressure as taught by the Cabo-Gajewski combination would be so exposed while the glass sheets are at a temperature between about 704°C and about 871°C which reads on the claimed temperature range of about 600°C to about 850°C.

Regarding Claim 51 and with particular reference to the rejection of Claim 49 by the Cabo-Argoitia combination above, The rejection of Claim 26 laid out that it would be obvious to perform at least a portion of the heating step under vacuum.

Regarding Claim 52 and with particular reference to the rejection of Claim 49 by the Cabo-Argoitia combination above and the rejection of Claim 27, the Cabo-Argoitia-Gajewski combination indicated that it would be obvious to cool the laminate for a "desired cooling period" and to expose the laminate to atmospheric pressure or super-atmospheric pressure during at least a portion of the desired cooling period

Claims 43 through 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Cabot-Argoitia as applied to Claim 25 above and in further view of Phillips (5,424,119) which will hereafter be referred to as the Cabot-Argoitia-Phillips combination.

Regarding Claim 43, The Cabot-Argoitia method sets forth all the elements of Claim 25 while failing to indicate that the dichroic particles should be of a substantially uniform orientation. Phillips (5,424,119) lays out the details of a polymeric sheet comprising a material having parallel first and second surfaces and a plurality of oriented multilayer interference thin film flake disposed in the layer of said material. Specifically, the plastic sheet is extruded or cast (Column 1, Lines 17-20) and a mechanical flow induced by said extrusion or said casting is utilized to induce laminar flow orientation of the pigment flakes in the film optical product (Column 2, Lines 2-5). One of the principle objectives for said orientation process is to provide a product wherein a relatively low amount of flakes can be provided in the object while still achieving the desired optical effect (Column 1, Lines 58-61). It would be obvious to one of ordinary skill in the art to orient the dichroic pigment flakes in the laminate structure as set forth by the Cabot-Argoitia combination in order to minimize the required amount of dichroic pigment flakes required in the laminate structure while maintaining the desired optical effect.

Further with respect to Claim 44 and in light of the Claim 43 rejection above, It would be obvious to one of ordinary skill in the art to modify the lamination process set forth by Cabo-Argoitia with a technique which induces laminar flow or shear flow

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induced orientation of said flakes as per the process outlined by Phillips. This modification would be an obvious route to achieve orientation of particles in the thin layer of dichroic flakes in a laminate structure of the type described in the Cabot-Argoitia combination.

With respect to Claim 45 and with reference to Claim 44 above, an induced mechanical flow or shear flow in a laminate structure of the type set forth by the Cabo-Argoitia combination would necessitate a viscous fluid in intimate contact with the dichroic pigment flakes. One obvious approach to achieving such a fluid in the region of the flakes would be to heat the entire laminate structure to the softening point of the glass sheets, thereby creating a deformable, viscous fluid from said sheets at least in the region of the dichroic pigment flakes. Since the entire structure must be heated to the softening point or elevated temperature state in order to fuse the laminate into a unitary structure, it would be an obvious extension of the Cabo-Argoitia-Phillips process to induce a aligning shear flow when the sheets are in said elevated temperature state. Applying of the shear in such an elevated temperature state would necessarily require that the shear is imparted upon the laminate during the heating or during a subsequent cooling period.

Similarly with respect to Claim 46, application of the shear force upon the laminate when the glass sheets are in the softened state according to the process set forth in Claim 45 above would necessitate that said laminate is at a temperature of between about 600°C and about 850°C wherein it is set forth in the specification (pg 20, Lines 10-11) that a laminate in said temperature range is in a softened state.

Regarding Claim 47, it is an old and well established phenomena in the field of fluid mechanics

(<http://web.archive.org/web/20020816181713/http://www.compliantlab.sdsmt.edu/awlad/introduction.htm>) that applying a centrifugal force to a fluid induces a radial linear shear stress upon the fluid. It would be obvious to one of ordinary skill in the art seeking to induced shear force in a laminate as outlined in the Claim 43 rejection above to do so by rotating said laminate according to the well established practice in spin casting or coating.

With respect to claim 48, an induced centrifugal force of the type set forth in the rejection of Claim 47 and as practiced in the art of spin casting would obviously be practiced by placing said laminate on a spinner and spinning said spinner to induce said centrifugal force.

Regarding Claim 50 and with particular reference to the rejection of Claim 49 by the Cabo-Argoitia combination above, the rejection of Claim 45 set forth that it would be obvious to heat the laminate to a softened state and apply a shearing force to the laminate in the softened state in order to impart a substantially uniform orientation to the dichroic particles in the laminate

.Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cabo-Argoitia-Phillips as applied to Claim 50 above and in further view of Gajewski as applied to Claim 27 above. Specifically, as indicated in the rejection of Claim 49 above, Cabo-Argoitia provided the following:

1. The rejection of Claim 25 set forth a method wherein two sheet like structures were provided along with a plurality of dichroic particles
2. The rejection of Claim 41 indicated that it would be obvious by Cabo-Argoitia to create a "preselected size" of dichroic pigment flakes by first separating the flakes into different groups and recombining some flakes from different groups into a "preselected size" range to produce "size classified particles".
3. The rejection of Claim 37 indicated that it would be obvious according to the Cabo-Argoitia combination to position a plurality of size-classified particles between two sheet-like substrates to form a laminate.
4. And, the rejection of Claim 25 laid out that it would be obvious to heat the laminate to an elevated temperature such that the particles become fused between the sheet-like substrates.

Further, the Cabo-Argoitia-Phillips provided the following :

1. Claim 45 set forth that it would be obvious to heat the laminate to a softened state and apply a shearing force to the laminate in the softened state in order to impart a substantially uniform orientation to the dichroic particles in the laminate

The Cabo-Argoitia-Phillips combination fails to explicitly indicate that the laminate should be cooled or that during said cooling it should be exposed to atmospheric or super-atmospheric pressures. However as outlined in the rejection of Claim 27 above, Gajewski indicates an intended use of the manufactured laminate article to include

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incorporation into an automobile windshield which is traditionally utilized at normal ambient conditions. As such, the process related by Gajewski, which includes a heating step or "period", *inherently* includes a cooling step or "a desired cooling period" on the return to ambient conditions from the "elevated temperature". Further, Gajewski indicates that after elimination of the vacuum, the laminate is exposed to elevated temperatures and elevated pressures generally approaching 100 psig to 200 psig in an autoclave (Column 6, Lines 48-59). Since Gajewski sets forth no further process steps involving sub-atmospheric pressures or processes carried out "under vacuum", it is understood that the remainder of the process including the "cooling period" proceeds at or above ambient pressure conditions. Further, Gajewski indicates that the application of elevated pressure or "laminating pressure" is effected in order to bond the laminate elements. It would be obvious to modify the Cabo-Argoitia-Phillips to include a exposure to elevated pressured as taught by Gajewski in order to assist in the fusion bonding of the laminate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-8153. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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